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Critical analysis of production constraints of basmati rice in Haryana

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Abstract
The study mainly focused on analyzing Constraints in production of Basmati rice. To fulfill the objective of the study, Karnal and Kaithal district were selected purposively on the basis of highest and second highest area under paddy cultivation in the state. The results of the study revealed that shortage of labour during transplanting, erratic supply of electricity, labour problem during manual harvesting and high cost of pesticides were identified as a major constraints which were inhibiting the production of Pusa basmati-1121 and CSR-30 in both Karnal and Kaithal districts of Haryana. Specifically in Karnal among all constraints of production Shortage of labour during transplanting was major constraint with MPS of 64 % followed by erratic supply of electricity with MPS 50 %. On the same lines in Sirsa district major production constraint was shortage of labour during transplanting with MPS of 62 % followed by Labour problem during manual harvesting with MPS of 53 %. Hence, Study suggested to eradicate these constraints with positive labour displacement in agriculture sector during peak seasons.

Keywords: Constraints, labour displacement, mean percent score

Introduction

Rice is the most significant food crop in India that plays an essential role in food security. It is the vital staple food for quite half of the globe population and provides 60-70 per cent body calorie intake to the customers. Rice may be a supreme trade goods to humanity, as a result of rice is actually life, culture, tradition and a way of income to millions. The International Organization General Assembly (IOGA), during a resolution declared the year 2004 because the International Year of Rice (Nguyen, 2006).

The area under basmati rice within the major states of India are: Punjab, Haryana, Uttar Pradesh, Jammu & Kashmir and Uttarakhand. In Haryana, the total rice area was 1274 thousand hectares, out of which total basmati rice area 634 thousands hectares. Karnal district has the maximum transplanted area under rice 159.20 thousand hectares, followed by Kaithal district 157.20 thousand hectares. Total basmati rice area in Karnal was 71.10 thousand hectares out of which the maximum area under basmati rice varieties was PB-1121 *i.e.* 34.90 thousand hectares and CSR-30 *i.e.* 24.70 thousand hectares followed by Kaithal total basmati rice area was 58.80 thousand hectares out of which the maximum area under basmati rice varieties was PB-1121 *i.e.* 32.60 thousand hectares and CSR-30 *i.e.* 22.40 thousand hectares. In Haryana, major basmati rice varieties was grown Pusa Basmati-1121, CSR-30, Pusa-1509, Pusa Basmati-1. (APEDA, December 2018) [3].

But growing of Basmati rice is not so easy because it encounters various constraints in production. Nirmala *et al.* (2009) conducted studied on economics and major constraints in rice cultivation in Kaithal district of Haryana. The study covered four villages of two blocks and data on cost and returns, and constraints to various aspects of rice cultivation were collected from eighty farmers. The costs incurred in cultivation of rice by the sample farmers was presented as Machine labour accounting for 25.27 per cent, human labour 19.72 per cent, fertilizers 18.90 per cent and pesticides 11.56 per cent. Manures accounted for 7.31 per cent to the total variable costs. Total costs in rice production amounted to be Rs. 33778.68 per hectare. Average yield was 4.99 tonnes per hectare and benefit-cost ratio worked out to be 1.27. Pests and disease incidence, lack of remunerative price and labour shortage were the major constraints in rice production. Similarly, Singh *et al.* (2010) [14] conducted study to examine the adoption level and constraints in rice production in Jabalpur district of Madhya Pradesh during 2006-07. Yield level of rice which was comparatively lower need to be increased substantially. Higher rice production can be achieved by adoption of all the recommended technologies by large number of farmers. Majority of the respondents 44 per cent studied were found to be medium level adopters.

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Adoption of correct dosage of fertilizers and manures as also the recommended variety was the highest (75% and 65% respectively), followed by seed treatment with fungicides 61 per cent, plant protection 53 per cent and weedicide application 52 per cent. The least adoption was for recommended nursery practices and plant population (8% and 4% respectively). Non availability of high yielding varieties, high cost of labour, lack of conviction in the new technology and weak extension support at the village level were the major constraints faced by the farmers. Thus, Study focused on analyzing the constraints in production of Basmati rice in Haryana and suggested some policy measures.

Materials and methods
Description of the study area
The study was carried out in Karnal and Kaithal districts of Haryana state. Karnal and Kaithal districts were selected on the basis of highest and second highest producer of rice. These two districts has a fertile land and a very proper condition for growing of paddy.

Sampling design
Purposive and multistage random sampling technique was used for the selection of districts and villages.

Selection of the district
To fulfill the objective of the study, Karnal and Kaithal district were selected purposively on the basis of highest and second highest area under paddy cultivation in the state.

Selection of the respondent
Sixty farmers were selected from each district comprising 30 each practicing basmati rice varieties (Pusa-1121 and CSR-30) randomly. Thus a total of 120 sample farmers were interviewed for the study.

Collection of data
Primary data: To work out the comparative economics of basmati rice, required data for crop year 2018-19 on area under basmati rice was collected by conducting personal interview of selected farmers on pretested schedule prepared for the study.
Secondary data: Secondary data required form the study was collected from agriculture department and other published and unpublished sources. The data pertaining to area, production, productivity and exports, prices were collected from the following secondary sources.
a. Agricultural and Processed Food Products Export Development Authority (APEDA).
b. Directorate General of Commercial Intelligence and Statistics (DGCIS).

Constraints inhibiting the production of basmati rice cultivation
A list of all the important constraints affecting the production was prepared with help of basmati rice growers. Regarding constraints analysis, the response (various constraints as perceived by the farmers in production of basmati rice in PB-1121 and CSR-30) were recorded on three point continuum i.e. very serious, serious and somewhat serious and subsequently assigned a weight-age of 3, 2 and 1 respectively. The

constraints score of each respondent as well as of all the respondents for each item pertaining to production constraints in PB-1121 and CSR-30 was worked out. The mean score and rank order were also computed.
Following formula was employed to calculate Mean Percent Score:

$$\text{Mean Score} = \frac{\text{Sum of score (constraint) for all responses}}{\text{Total number of respondents}}$$

$$\text{Mean Percent Score} = \frac{\text{Mean of item (constraint) for all responses}}{\text{Maximum score of the item (constraint)}} \times 100$$

Results and discussion
Constraints in production of basmati rice
Constraints in production of basmati rice in Karnal district of Haryana
Production constraints in basmati rice in Karnal district of Haryana given in Table 1. Basmati rice growers were observed as a major problem of shortage of labour during transplanting (64.44%), followed by erratic supply of electricity (50.56%), labour problem during manual harvesting (46.67%), high cost of pesticides (38.89%), high cost of fertilizers (19.44%), high wages of labour (17.22%), high incidence of pest and disease (15%), high cost of seed (11.11%), water table declining (8.33%) in basmati rice in the study area. Similar findings were reported by Nirmala *et al.* (2009), Singh *et al.* (2010) [14] and Churpal *et al.* (2015) [4].

Table 1: Production constraints expressed by the respondents in basmati rice in Karnal district of Haryana during the year in 2018-19 (N=60)

Sr. No.	Constraints	MS	MPS	RANK
1.	Shortage of labour during transplanting	1.93	64.44	1
2.	Erratic supply of electricity	1.52	50.56	2
3.	Labour problem during manual harvesting	1.40	46.67	3
4.	High cost of pesticides	1.17	38.89	4
5.	High cost of fertilizers	0.58	19.44	5
6.	High wages of labour	0.52	17.22	6
7.	High incidence of pest and disease	0.45	15.00	7
8.	High cost of seed	0.33	11.11	8
9.	Water table declining	0.25	8.33	9

MS = Mean Score, MS= Mean Percent Score and N= No. of respondents

Constraints in production of basmati rice in Kaithal district of Haryana
Production constraints in basmati rice in Kaithal district of Haryana are presented in Table 2. Basmati rice growers were observed as a major problem of shortage of labour during transplanting (62.78%), followed by labour problem during manual harvesting (53.33%), erratic supply of electricity (45.00%), high cost of pesticides (43.89%), high cost of fertilizers (28.33%), high wages of labour (23.89%), high incidence of pest and disease (17.22%), high cost of seed (15.00%), water table declining (5.00%) in basmati rice in the study area. Similar findings were reported by Nirmala *et al.* (2009), Singh *et al.* (2010) [14] and Churpal *et al.* (2015) [4].

Table 2: Production constraints expressed by the respondents in basmati rice in Kaithal district of Haryana during the year 2018-19 (N=60)

Sr. No.	Constraints	MS	MPS	RANK
1.	Shortage of labour during transplanting	1.88	62.78	1
2.	Labour problem during manual harvesting	1.60	53.33	2
3.	Erratic supply of electricity	1.35	45.00	3
4.	High cost of pesticides	1.32	43.89	4
5.	High cost of fertilizers	0.85	28.33	5
6.	High wages of labour	0.72	23.89	6
7.	High incidence of pest and disease	0.52	17.22	7
8.	High cost of seed	0.45	15.00	8
9.	Water table declining	0.15	5.00	9

MS = Mean Score, MS= Mean Percent Score and N= No. of respondents

Conclusions
Rice is the main food grain crop ensuring nutritional security of the whole country. It was imperative to study the constraints in production of Basmati rice. The results of the study revealed that shortage of labour during transplanting, erratic supply of electricity, labour problem during manual harvesting and high cost of pesticides were identified as a major constraints which were inhibiting the production of Pusa basmati-1121 and CSR-30 in both Karnal and Kaithal districts of Haryana. Specifically in Karnal among all constraints of production Shortage of labour during transplanting was major constraint with MPS of 64 % followed by erratic supply of electricity with MPS 50 %. On the same lines in Sirsa district major production constraint was shortage of labour during transplanting with MPS of 62 % followed by Labour problem during manual harvesting with MPS of 53 %. Hence, Study suggested to eradicate these constraints with positive labour displacement in agriculture sector during peak seasons.

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